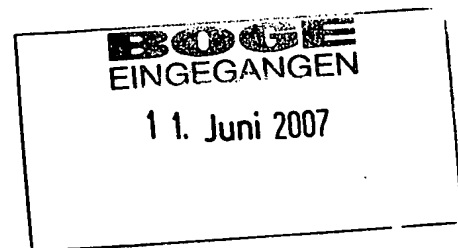




12W



Commissioner for Patents
P.O. Box 1450,
Alexandria, VA 22313-1450
- USA -
To the attn. of the examiner of
US 2004/0244393A1 (Appl.No.:10/826655)

postal address: BOGE Kompressoren
to Mr. Dämgen
Otto-Boge-Str. 1-7
33739 Bielefeld
Germany
E-Mail: u.daemgen@boge.de

In Bielefeld, 04th of June 2007

Dear Madam or Sir,

when looking through new patent applications we found a hint to the application from Ingersoll-Rand, US 2004/0244393 A1 "variable speed compressor cooling system".

We doubt, that all claims in it refer to something new. The idea of controlling the speed of an electric motor driving a cooling air fan with the help of a temperature sensor in the cooled fluid was known long before the date of filing, the 16th of April 2004.

And it was known in compressors of different kinds, including dry-running screw compressors and oil-injected compressors.

As patent literature is the most undoubted and often best available proof, we want to draw your attention to our European patent application EP 1249603 A2, filed 23rd of March 2002 and published 16th of October 2002. [The patent EP 1249603 B1, containing a translation of the claims in English was granted and published 29th of November 2006].

Its relation to US 2004/0244393 A1 is not obvious, as the important part of it is in German and its claims refer to avoiding thermal shock and condensation. The best overview of this patent you have looking at Fig. 3, a function diagram.

Here you find variable speed drives 40 and 41 for the cooling air, a controller 46, temperature sensors for compressed air 48 and 54, sensors for ambient air temperature 49, ambient air humidity 50, output pressure 45 etc.

In the text you find, that the applicability is for single-stage compression, too (pg.2 line 7 to 9). And Fig. 3 shows a control of oil ("ÖL") temperature by a variable speed drive near No. 35, controlled by the controller 46, too.

The idea of controlling the compressor outlet temperature suitable for a downstream dryer is mentioned in pg.5, line 14 to 20.

Transferring this scheme to a different compressor should not be sufficient to claim that as something new. If you think, that controlling the fan speed in a different compressor instead of an oil-free compressor (claim 10 and 11) is enough for a patent, please let us know. Then we will care for a proof, that this was done long before that patent application was filed.

Besides that, we remember that our patent application was criticized by the European Patent Office, notably by the citation of the German application DE 19933989, published at the 25th of January 2001 (it is not necessary to translate it, just look at the figure, where cooling oil in the pipes 13 and 14 of the 2-stage gas compressor is cooled by a fan with variable speed:

The European Patent Office regarded temperature control in a compressor with a variable speed drive fan (with inverter or not) and temperature sensor even in the case of our very special compressor type as not inventive - and asked us to reduce our claims.

It is not the list of citations (below) which shows the rationale. The point was: regulating the temperature of something with the help of a temperature probe and a variable speed fan cooling is well-known, cooling the output of a compressor is well-known, just joining this is not an invention. (And so there was no need for the European Patent Office to look for a prior air-compressor with temperature-probe-regulated variable-speed-fan cooling – for them it was not inventive anyway)

List of the citations in EP 1249603

BE 1008367 – Atlas Copco – cooling of the main drive motor in a compressor with variable speed, not important for this case

DE 19933989 – Linde – variable speed fan for the cooling oil of a compressor

-> important, see the figure above

US 5590539 - Todd Marohl - variable speed fan for the fluid output cooling of an injected compressor

-> important, see the figure above

US 6203285 – Westinghouse Air Brake Co. – unloading of a compressor, not important in this case

JP 11037053 – Ishikawajima Harima Heavy Ind. Co. Ltd. – variable speed drive for compressor and fan (one drive for both, no regulation), not important for this case

JP 10184571 – Ishikawajima Harima Heavy Ind. Co. Ltd. – variable speed drive for compressor and fan (one drive for both, no regulation), not important for this case

and DE 10117790 (corresponding to EP 1249603, it was abandoned, when EP 1249603 was granted)

DE 43 32 917 C2 – Fuhrmann, Schreiner – refrigeration circuit, not important for this case

DE 35 41 838 A1 – Kopp AG – fan for the output of a compressor, measuring temperature and/or pressure + regulating the cooling is mentioned (last page, line 55-63) but there is no mentioning of regulating the fan speed, so it is not really important for this case

DE 69 33 394 U – Loba – cooling fan for compressor, its speed is variable by changing the pulleys of a belt drive, so it is not really important for this case.

Best regards,


(Dr. Ing. U. Dämgen)